



# Warm Springs Fish Technology Center

## September/October 2009 Activity Report

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Southern Rainbow, *Villosa vibex*. Credit: USFWS Photo.

# Warm Springs Fish Technology Center

The Fish Technology Center (FTC) is a component of the Warm Springs Regional Fisheries Center (RFC) and was developed to improve and enhance fisheries management. We provide consolidated technical operational support to regional fisheries operations and technical assistance to the public. The Fish Technology Center is comprised of a cryopreservation laboratory, conservation genetics laboratory, and the National Fish Strain Registry at Warm Springs, Georgia, and a field station in Wadmalaw Island, South Carolina.

## Goals:

- Provide management support of interjurisdictional coastal and riverine fishes such as robust redhorse, shortnose sturgeon, Gulf sturgeon, and Gulf striped bass.
- Provide conservation genetics support for regional fishery programs.
- Maintain the National Fish Strain Registry for dissemination of information and support of private, state and federal broodstocks.
- Develop cryopreservation techniques for imperiled fish and mussels.
- Develop hatchery product evaluation techniques.

## Cryopreservation

Cryopreservation is a process in which a living cell is frozen, stored, and thawed and remains viable. Cryopreserved sperm assists reproductive efforts by allowing spawning to take place whenever females are ready, reduces the need to hold males, and can increase flexibility and genetic diversity in spawning protocols.

Currently, the Warm Springs FTC is working on numerous species of fish, including threatened or endangered species. In the near future, the FTC will expand cryopreservation research to include other aquatic species (e.g., freshwater mussels, amphibians) for conservation efforts.



Axolotl, *Ambystoma mexicanum*.  
Credit: USFWS Photo.

## Conservation Genetics

The Conservation Genetics lab primarily works with biologists and managers of the region to design and implement genetic research on imperiled aquatic organisms.

Current Projects include estimating genetic diversity from: alligator gar, Gulf Coast striped bass, robust redhorse, freshwater mussels, and threatened and endangered species such as spotfin chub.

## National Fish Strain Registry

The National Fish Strain Registry (NFSR) is an internet-based program that assembles information on life history, genetics, reproduction, and behavior of wild populations and domestic fish strains throughout the United States. The NFSR database is available for use by public and private producers as well as resource managers of federal, state, and tribal governments through a registration process. Once registered, users are able to search, create new records, edit records, and request information. The NFSR's vision is to provide a broad collaborative program that provides access to data and information on our Nation's aquatic resources. You must be a registered user to access the NFSR website; please contact [chester\\_figiel@fws.gov](mailto:chester_figiel@fws.gov) or [nicole\\_rankin@fws.gov](mailto:nicole_rankin@fws.gov) to become a registered user.

# Partnerships and Accountability

## Red Drum Sampling in South Carolina

William Wayman helped the Bears Bluff National Fish Hatchery (BBNFH) during their annual red drum sampling effort on September 15, 2009. In partnership with the South Carolina Department of Natural Resources, the BBNFH stocks red drum fingerlings in areas around Wadmalaw Island, SC. Sampling trips are made periodically to assess fish survival and to determine the success of stocking efforts. Red drum are collected and genetically identified (by fin clips) to determine if the fish are hatchery raised or wild spawned.

## GADNR Partnership

Nicole Rankin assisted Brent Hess and Paul Jones, biologists from Georgia Department of Natural Resources, with standardized fish sampling of Goat Rock Lake on September 21, 2009. Fish were collected from ten stations using an electrofishing boat. This standardized sampling is conducted for stock management programs.

Greg Moyer, William Wayman, Nicole Rankin, Brian Hickson (Fish Health Center), Gary Eddy (SCA intern), Brent Hess (GADNR), and Paul Jones (GADNR) assisted the Warm Springs National Fish Hatchery with detecting the presence of an oxytetracycline (OTC) mark on hatchery-raised, Gulf striped bass. Gary and Brian collected sixty fish from hatchery ponds for fish health inspection. Nicole, Brent, and Paul collected, thin-sectioned, and checked for OTC mark presence on otoliths from twenty of these fish.

## Partnering with Auburn University

Bill Bouthillier and Dr. Jim Stoeckel from the Department of Fisheries and Allied Aquacultures at Auburn University conducted a survey of Chewacla Creek on September 24, 2009. This survey was conducted to collect mussels for several cryopreservation studies being developed at the FTC. Six mussel species were collected including one mussel species that has not been documented in Chewacla Creek.

Chester Figiel, Jr. and Nicole Rankin visited Dr. Jim Stoeckel at Auburn University to assist in a mussel tagging/movement study of Chewacla Creek on October 8, 2009. The group also discussed their collaborative research on the Piedmont blue burrower (*Cambarus harti*), a state endangered crayfish.

Greg Moyer was invited to the Department of Fisheries and Allied Aquacultures at Auburn University on October 23, 2009 to present the role of effective population size in conservation biology. This seminar presentation was given to students and faculty and outlined the importance of obtaining necessary genetic data to understand the role of various factors that lead to species extinction and population extirpation.



Measuring mussels for mapping study.  
Credit: USFWS Photo.



Tagged mussels. Credit: USFWS Photo.

## Partnerships and Accountability

### Flint River Structured Decision Making

William Wayman and Greg Moyer attended an initial structured decision making workshop for the Flint River on September 17 – 18, 2009. The goal of the workshop was to develop a working model that can be used by natural resource managers to determine significant biotic and abiotic parameters influencing mussel survival in the Flint River. The workshop consisted of discussions of the various inputs (contaminants, habitat, water quality, etc.) and processes that affect the survival of freshwater mussels in the Flint River and how to classify these sources during the creation of the initial model. Participants of the meeting included biologists from the USFWS, U.S. Geological Survey, Georgia Department of Natural Resources, and University of Georgia.

### Lake Harding Mussel Survey



Surveyors counting and identifying mussels.  
Credit: USFWS Photo.

Bill Bouthillier assisted Georgia Power Company representatives in a mussel fauna survey at Lake Harding during a planned maintenance drawdown on October 15 and 16, 2009. The survey was conducted during this drawdown with the hopes of temporarily uncovering mussels and potential mussel habitat in tributaries and other shoreline areas that are typically inundated by the normal operating pool. Despite the rainy mornings, cold water temperatures, and recent flooding, the surveyors found over 500 mussels in the lake during two days of surveying. Other survey participants included Sandy Abbott and Beau Dudley from the Fort Benning Ecological Services Field Office, staff from Alabama Department of Conservation and Natural Resources, and biologists from Columbus State University. This combined effort was a great success and resulted in further partnership building and inter-agency cooperation among the U.S. Fish and Wildlife Service, state, and academic partners.



Eastern floater, *Pyganodon cataracta*.  
Credit: USFWS Photo.

## Aquatic Species Conservation and Management

### 139<sup>th</sup> Annual American Fisheries Society Meeting

William Wayman and Chester Figiel, Jr. attended the 139<sup>th</sup> Annual American Fisheries Society Meeting in Nashville, TN on August 30 – September 3, 2009. Chester and his co-presenters (Jason Goldberg and Hayley Dikeman) gave an oral presentation entitled “Incorporating Climate Change into the U.S. Fish and Wildlife Service Fisheries Program” during the Fisheries in a Changing Climate: Guidance for Decision-Makers and Resource Managers symposium. William represented the Fisheries Program at the USFWS Trade Show booth and attended presentations dealing with various aspects of the FTC’s priority work areas.

# Aquatic Species Conservation and Management

## Lake Sturgeon Scute Removal

Chester Figiel and Nicole Rankin assisted the Warm Springs National Fish Hatchery on October 7, 2009 with marking juvenile (15-20 cm) lake sturgeon, *Acipenser fulvescens*. Since 2000, the hatchery has been rearing lake sturgeon in an effort to reintroduce the species in the Lower French Broad River in TN and the Coosa River in GA. Fish are marked by removing one or two scutes using a curved scalpel. The scutes are removed in a certain pattern each year, and this pattern helps to determine the year-class of fish when recaptured. These fish were stocked as part of restoration efforts in the Tennessee River watershed in collaboration with the Tennessee Wildlife Resources Agency.



Removing scutes. Credit: USFWS Photo.

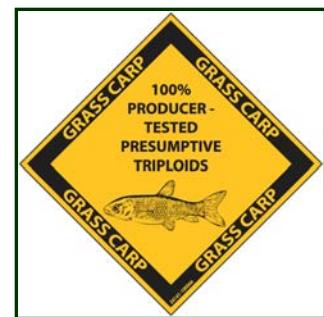


Lake sturgeon. Credit: USFWS Photo.

## Leadership in Science and Technology

### National Triploid Grass Carp Inspection and Certification Program

William Wayman participated in the National Triploid Grass Carp Inspection and Certification Program (NTGCICP) Meeting from September 2 – 3, 2009. The meeting brought together triploid grass carp producers and inspectors to discuss various aspects of the NTGCICP. William Wayman presented information about a portable triploid evaluation kit that the FTC is developing. This kit will assist law enforcement officers by providing a simple method to determine if a truckload of fish needs to be detained for further triploidy verification. The kit will use a stained blood sample from the fish, a portable microscope, and image analysis to give a field determination of ploidy level.



NTGCICP Program.  
Credit: USFWS Photo.

## NFSR Has Moved

As of October 16, 2009, the National Fish Strain Registry (NFSR) database is available on a new server at <https://systems.fws.gov/nfsr>. The graphical user interface and database functionality have remained the same, but the initial log-in screen has changed. Registered users can visit the NFSR website and log-in using their USFWS active directory username and password. To request access to the NFSR, please email Chester Figiel ([chester\\_figiel@fws.gov](mailto:chester_figiel@fws.gov)) and Nicole Rankin ([nicole\\_rankin@fws.gov](mailto:nicole_rankin@fws.gov)). The NFSR is an internet-based program that assembles information on the life history, genetics, reproduction, and behavior of wild populations and domestic broodstock strains. This management tool is available for use by federal and state governments, private producers, and tribal entities.

## Leadership in Science and Technology

### Using Cryopreservation to Recover Freshwater Mussels

Bill Bouthillier is continuing to study cryopreservation techniques to assist in the recovery of freshwater mussels. Last year, the toxicity of several cryoprotectants was tested on glochidia to determine percent survival. This year, two cryoprotectants were used to evaluate their effectiveness in freezing protocols. Glochidia were mixed with the cryoprotectants, loaded into 0.5-ml straws, and frozen in liquid nitrogen. After 72 hours, glochidia were thawed and checked to determine survival. Unfortunately, during the freezing process, many glochidia closed, and therefore, survival rates were unable to be determined. Further studies will be conducted to assess viability and survivorship using in-vitro culture techniques.



Filling straws with glochidia before freezing. Credit: USFWS Photo.

## Public Use

### Warm Springs Celebrates 110 Years During Open House

The FTC participated in the annual Warm Springs National Fish Hatchery Open House on September 26, 2009. This event celebrated the hatchery's 110<sup>th</sup> year of operation and focused on promoting the USFWS mission and Warm Springs conservation efforts, improving communication and relationships with the local community, and encouraging people to become environmental stewards in their community. This year, more than 200 people attended and learned about the fisheries programs at Warm Springs. FTC staff set up displays and computers to highlight cryopreservation, conservation genetics, and freshwater mussel research efforts. Two video screens provided information on sturgeon conservation in the United States and internship opportunities with the USFWS. The FTC egg trailer was the largest display and demonstrated egg incubation techniques. A 50-gallon touch tank with crayfish, salamanders, and turtles and a 500-gallon tank with shortnose sturgeon were the most popular attractions at this year's event. FTC biologists discussed sturgeon conservation including cryopreservation, genetics, and spawning efforts to attendees. William Wayman, Nicole Rankin, Bill Bouthillier, and Ashantye' Williams were present for the FTC. Other participants included staff from the Regional Fisheries Center, Fish Health Center, and National Fish Hatchery, members of the Friends of the Warm Springs National Fish Hatchery, and several other volunteers.



FTC Cryopreservation and Genetics Table. Credit: USFWS Photo.



FTC staff teach visitors about shortnose sturgeon. Credit: USFWS Photo.



Fish Health Center highlighted their work. Credit: USFWS Photo.

## Public Use

### Warm Springs Helps the Hooch

Bill Bouthillier and Nicole Rankin worked with staff from the Fort Benning Ecological Services Office to participate in the Chattahoochee Watershed Festival in Columbus, Georgia on October 16, 2009. The FWS staff manned a booth during the festival, which follows the annual river and creek clean-up on the Chattahoochee River. The most popular attractions at the booth were the turtle and crayfish touch tank, a face painting table, and the two baby American alligators. Several thousand children filtered through the booth, touched and held crayfish and turtles, and pet the alligators. Despite the cold weather and recent flooding, over 10,000 volunteers helped clean-up trash along the banks of the Chattahoochee River and some of its tributaries. Last year, volunteers removed over 150,000 pounds of litter.



Bill Bouthillier and Monkey Joe.  
Credit: USFWS Photo.



Turtle and crayfish touch tank.  
Credit: USFWS Photo.

Bill Bouthillier and Nicole Rankin gave a tour of the FTC facilities and discussed cryopreservation, conservation genetics, and freshwater mussel research with a Columbus State University Natural History of Vertebrates class on September 3, 2009.

## Workforce Management

### LaGrange College Student Interns at Warm Springs

Autumn Dunning started an internship at the FTC on September 29, 2009. During her semester-long internship, she is assisting Chester Figiel, Jr. with a study that examines human-induced disturbance on the distribution and abundance of aquatic organisms. Autumn helps collect, measure, and keep records for stream dwelling salamanders and crayfish collected from two or more sites on the Warm Springs facility. Additionally, she collects water quality data (e.g., pH, temperature, flow) from the sites. Autumn is completing her final year at LaGrange College in Georgia and will graduate with a Bachelor of Science degree in May 2010. She hopes to pursue a Master of Science degree in marine biology.



Autumn Dunning. Credit: USFWS Photo.